

CHAPTER 1

Size and development of the shadow economy and of tax evasion within Poland and of its neighbouring countries from 2003 to 2013: some new facts

Friedrich Schneider^{*}
and Konrad Raczkowski^{**}

Abstract

In this paper the size and development of the shadow economy and of tax evasion within Poland and neighbouring countries (except for the Ukraine) are calculated over the period 2003 to 2010. The size and development of the shadow economies is also shown for 36 highly developed OECD countries. The average size of the shadow economy in 27 EU-Countries was 22.3% in 2003 and decreased to 18.4% (of official GDP) in 2013. We also consider the

^{*} Prof. Dr. Dr.h.c.mult., Department of Economics, Johannes Kepler University, friedrich.schneider@jku.at, <http://www.econ.jku.at/schneider>.

^{**} Prof. Dr., Institute of Economics, University of Social Sciences, raczkowski.konrad@gmail.com.

most important driving forces of the shadow economy in 38 OECD countries. The biggest ones are with 14.6% unemployment and self-employment, followed by tax morale with 14.5% and GDP growth with 14.3%. The proportion of tax evasion (accounting for indirect taxation and self-employment activities) was on average 4.2% (of official GDP) in Poland, 1.9% in Germany and 2.9% in the Czech Republic.

Keywords: shadow economies of 36 OECD countries, tax evasion within Poland, the Czech Republic, Germany, Lithuania and the Slovak Republic, driving forces of the shadow economy, tax pressure, state regulation

1. Introduction

For the first time in this paper the size and development of the shadow economy and the size and development of tax evasion of Poland and its neighbouring countries are investigated. With respect to tax evasion the paper concentrates on two important aspects: tax evasion by not paying the VAT and tax evasion which originates from activities from self-employment. Hence, this paper is an attempt to estimate the size and development of tax evasion over the period 1999 to 2010 and to investigate whether the amount of tax evasion has been reduced or has been increased over time. This is a purely empirically orientated paper.

Chapter 2 presents the shadow economy in terms of its semantic scope as well as the characteristics of its expansion.

In the chapter 3 the size and development of the shadow economies in 36 OECD countries are shown over the period from 2003 to 2013. We also concentrate on Poland and its neighbouring countries (except for the Ukraine). Chapter 4 is a short remark about the most important driving forces. In chapter 5 (the core chapter of this paper), the size and development of tax evasion of Poland and its neighbouring countries is shown. Finally, chapter 6 provides some concluding remarks.

2. Unofficial economy vs. grey economy – what we know about it

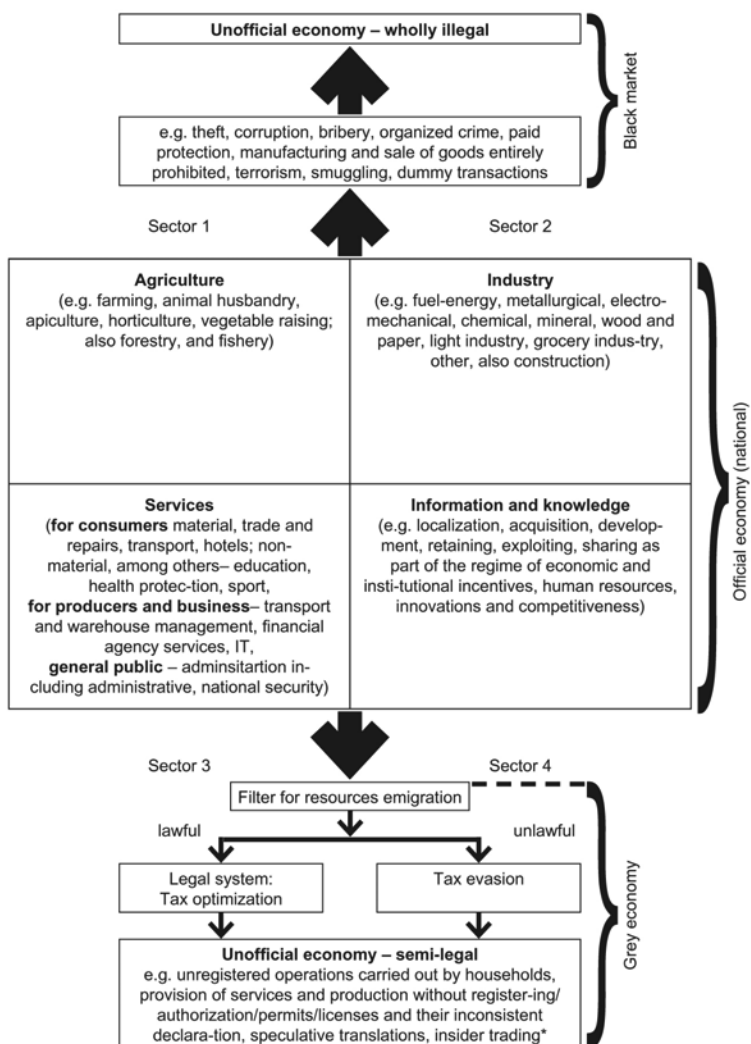
Because of inconsistencies in defining the “unofficial economy,” research literature, legislative acts and media publications contain descriptions of the unofficial economy that are not always synonymous to the potential readers. Also it should be very strongly stressed that the grey economy is just one of more components of the unofficial economy that, in turn, is an inherent component of the functioning of each national economy. The unofficial (informal) economy (which is also defined as the shadow economy being its most corresponding synonym) is divided into (Fig. 1) [Raczkowski, 2013, pp. 353–354]:

- a) Semi-legal or grey economy;
- b) Wholly illegal economy or the so-called “black market.”

“The grey economy (unofficial semi-legal economy) is both a deliverance and a threat to the state. Everything depends on whether the person engaged in such business, which typically applies tax optimization on purpose and, at the same time, evades taxes, is motivated by the account of unlimited profits and calculated losses or struggles to keep the company on the market” [Raczkowski, 2013, p. 360]. On the other hand, the black market (unofficial wholly illegal economy) with its inherently criminal nature is nothing more but a threat. The existence of the black market directly undercuts or blocks the pursuits of legal business and threatens the state as an organization [Raczkowski, 2013, p. 356].

Usually, the participants of the unofficial semi-legal (grey) economy undertake two types of activities at the same time: lawful tax optimization (tax avoidance) and illegal tax evasion. Provided that tax avoidance can “bear the marks of lawfulness” only in nominal terms, in fact being a form of tax evasion or typical organized crime (component of the unofficial wholly illegal economy). These are overlapping areas that grow or shrink depending on the stringency of the legal and organizational system of the state (resource emigration filter).

“If we assume that the taxpayer gives preference to solution A (semi-legal, unlawful) over solution B (legal), so in the transitivity of preferences he always chooses solution A (semi-legal, unlawful). Whilst the taxpayer more favours solutions generating actual added value (profit) – resources A than those causing its decline by means of



* Insider trading – use of non-public information in transaction with securities of their own companies by the persons employed in a given company (insiders), or persons having privileged access to it (brokers, auditors).

Figure 1. Unofficial economy in the context of the whole economic operations carried out by the state

Source: Raczkowski, K., *Gospodarka nieoficjalna w systemie zarządzania państwem*, [in:] E. Gołębiowska and K. Raczkowski, *Zarządzanie – nowe perspektywy, Przedsiębiorczość i zarządzanie*, Społeczna Akademia Nauk, Łódź 2013, Vol. XIV, Book 8, pp. 353–354.

tax optimization (loss – negative financial outcome) – resources B, at the same time favouring resources A over other resources C (legality of conduct), so in the ultimate choice the taxpayer gives preference to resource A over resource C. In other words it is more beneficial to opt for the semi-legal solution, being unlawful to some extent” [Rackowski, p. 355].

Many national states, noticing the phenomena of tax evasion and tax avoidance are implementing or going to implement specific reforms, such as the following:¹

- a) Bulgaria, 2012: Adopted a fiscal strategy to improve tax collection and control the avoidance of taxation.
- b) Cyprus, December 2012: Allocated special funds for tax avoidance and financial abuse control in their successive budget for 2013. Imposed a number of obligations on both the business and the tax administration to improve information sharing and tighten tax regulations. Non-residents are required to file annual tax returns and foundations are expected to account for dividends and interest.
- c) Latvia: Adopted the so-called “zero declaration” for the legal notification of non-declared income to combat tax evasion and tax avoidance.
- d) Portugal, 2010: Adopted solutions enabling more control of tax evasion.
- e) Estonia: Reinforced their controls against tax avoidance by controlled foreign companies (CFC), including specifically the restrictions on the use of transfer pricing systems.
- f) UK: Seems to be the most successful and far going in its struggle against tax avoidance and evasion. Since 2010 they have earmarked almost 1 billion pounds for the control of tax abuses, tax avoidance (tax optimization) and tax evasion. They employed almost 2.5 thousand new employees at HMRC and allocated a special team of Offshore Co-ordination Unit to combat tax offenses in tax havens. They have provided for a possibility of publishing names of tax legislation abusers or offenders and established a penal tax rate of up to 200% against their tax evaders [No save..., 2013, p. 2]. On July 17, 2013, they passed

¹ Taxation trends in the European Union. Data for the UE Member States, Iceland and Norway, Eurostat statistical book, European Commission, Brussels 2013.

a General Anti Abuse Rule (GAAR), effective since April 1, 2013, enacted as part of their budgetary law (Finance Act's grant of Royal Assent), the purpose of which is to enable the management of the tax avoidance risks [Aaronson, 2011; Freedman, 2012, pp. 22–27; General..., 2013, pp. 1–3]. The overall goal is to deter businesses from aggressive tax planning and make them take into account the effect of GAAR each year as part of the planning as such [UK Finance, 2013].

- g) A group of states including Indonesia, Japan, Mexico, Poland and Russia do not yet have any statutory regulations addressing strictly the avoidance of taxes (tax optimization) similar to or coinciding with GAAR [GAAR..., 2013, pp. 32–84].

It seems that tax abuse, including specifically the cadging of VAT returns from the governments, can become more common as part of the EU's common market with its intra-community transactions for the supply and purchase of goods and the related entitlement to use the 0% VAT rate. This not only leads to lower government revenues, which requires increasing the debt or cutting on the spend (resulting in slower economic growth) but, first of all, suppresses fair competition by questioning the purpose of paying taxes. It is estimated that “around one trillion Euros is lost to tax evasion and avoidance every year in the EU” [Clamping..., 2012]. In view of the rise of this adverse trend, the European Parliament passed a resolution of 19 April 2012 on the call for concrete ways to combat tax fraud and tax evasion. And on December 6, 2012, the European Commission adopted an “Action Plan to strengthen the fight against tax fraud and tax evasion”² together with recommendations with respect to aggressive tax planning.³ On the same day, the Commission passed also a “Recommendation regarding measures intended to encourage third countries to apply minimum standards of good governance in tax matters”⁴ that demonstrates how serious the problem of tax abuse is in the European

² Action Plan to strengthen the fight against tax fraud and tax evasion, European Commission, Brussels COM(2012)722 final.

³ Commission Recommendation on aggressive tax planning, European Commission, Brussels COM(2012)8806 final.

⁴ Recommendation regarding measures intended to encourage third countries to apply minimum standards of good governance in tax matters, European Commission, Brussels, COM(2012)8805 final.

Union as such. There are 13 tax havens in Europe “as such” and the Mediterranean: Andorra, Guernsey, Jersey, Cyprus, Gibraltar, Isle of Man, Ireland, Lichtenstein, Luxembourg, Malta, Monaco, San Marino and Switzerland. And there are almost 51 tax havens worldwide (Fig. 2) [Gravelle, 2013, p. 4]. The difference in the number of tax havens between the cited paper (51) and the table (50) results from the fact that the Channel Islands have not been counted as a single tax haven but split into two separate islands of Guernsey and Jersey. At the same time, Oxfam included two large tax havens (the state of Delaware and the Netherlands) in the aggregate classification.

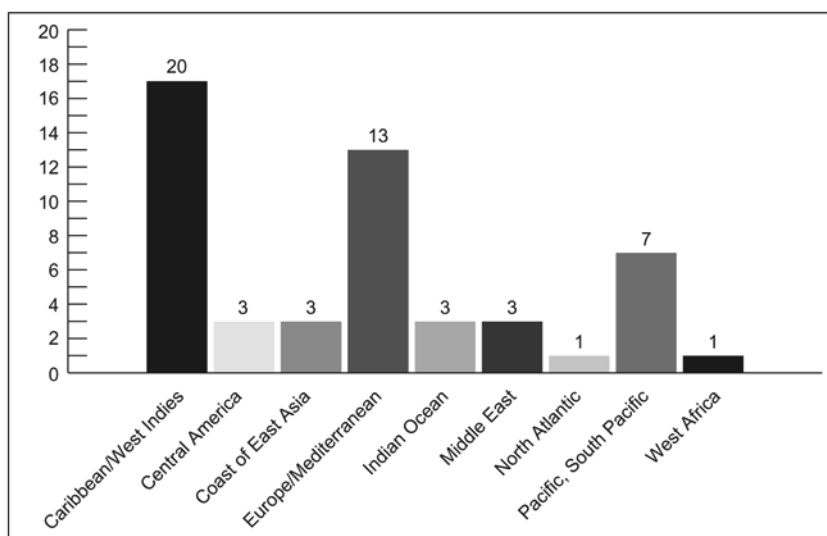


Figure 2. Tax havens worldwide, 2013

Source: Based on *Countries Listed on Various Tax Haven Lists*, [in:] J.G. Gravelle, *Tax Havens: International Tax Avoidance and Evasion*, Congressional Research Service, Washington, January 23, 2013, p. 4.

As shown by the Oxfam research, as much as US\$ 18.5 trillion has been hidden in tax havens, which means a US\$ 156 billion per year tax gap in the aggregate budget of the EU states. Of this amount, US\$ 12 trillion is held in the 21 tax havens associated with the EU states (which represents two thirds of the whole number). Almost one third of the tax havens are associated with UK (10 states: Anguilla, Bermuda, British Virgin Islands, Cayman Islands, Gibraltar, Guernsey,

Isle of Man, Jersey, Montserrat and the Turks and Caicos Islands) [Oxfam, 2013], which demonstrates that both EU and particularly UK have to suppress or eliminate the functioning of the tax havens first to make the combat against tax avoidance and evasion possible at all.

3. Size and Development of the Shadow Economies in 36 OECD Countries

In the Tables 1 to 4 the size and development of 31 European and of five non-European shadow economies over the period 2003–2013 is presented.⁵ If we first consider the size and development of the shadow economy of Poland it had a value of 27.7% in the year 2003, which then steadily declined to 25.3% in the year 2008, increased slightly to 25.9% in the year 2009 and since then decreased to 23.8% for the year 2013 (forecast).⁶ If we consider the direct neighbours of Poland, Germany, the Czech Republic, Slovakia and Lithuania, Germany had a shadow economy of 17.1% in the year 2003 which declined to 14.2% in the year 2008 and increased to 14.6% in 2009 and then decreased again to 13.0% in the year 2013 (forecast) (see also Figures 3 and 4). In the Czech Republic we had a shadow economy of 19.5% in 2003 which decreased to 16.6% in 2008, increased to 16.9% in 2009 and decreased again to 15.5% in 2013 (forecast). In Slovakia we had a shadow economy of 18.4% in 2003 which decreased to 16.0% in 2008, increased to 16.8% in 2009 and decreased again to 15.0% in 2013 (forecast). In Lithuania we had a shadow economy of 32.0% in 2003 which decreased to 29.1% in 2008, increased to 29.6% in 2009 and decreased again to 28.0% in 2013 (forecast). If we consider the results of the average size of the shadow economy of the 27 European Union countries, we realize, that the shadow economy in the

⁵ The calculation of the size and development of the shadow economy is done with the MIMIC (Multiple Indicators and Multiple Courses) estimation procedure. Using the MIMIC estimation procedure one gets only relative values and one needs other methods like the currency demand approach, to calibrate the MIMIC values into absolute ones. For a detailed explanation see Friedrich Schneider, editor, *Handbook on the Shadow Economy*, Cheltenham (UK): Edward Elgar Publishing Company, 2011.

⁶ The calculated values for 2013 are projections based on the forecasts of the official figures (GDP, unemployment, etc.) of these countries.

year 2003 was 22.3% (of official GDP), decreased to 19.2% in 2008 and increased to 19.8 % in 2009 and then decreased again to 18.4 % in 2013 (Table 1). If we compare the average of 31 European countries, in 2003 the average size was 22.4%, decreased to 19.4% in 2008, and increased to 19.9% in 2009 and decreased to 18.5% in 2013 (Table 2). If we consider the development of the shadow economy of Australia, Canada, Japan, New Zealand and the USA, we find a similar movement over time (see Table 3); in 2013 these 5 countries had an average size of the shadow economy of 8.6%, in 2010 this value was 9.7%.

Table 1. Size of the Shadow Economy of 27 European Countries over 2003–2013 (in % of off. GDP)

Country/ Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Austria	10.8	11	10.3	9.7	9.4	8.1	8.47	8.2	7.9	7.6	7.5
Belgium	21.4	20.7	20.1	19.2	18.3	17.5	17.8	17.4	17.1	16.8	16.4
Bulgaria	35.9	35.3	34.4	34	32.7	32.1	32.5	32.6	32.3	31.9	31.2
South-Cyprus	28.7	28.3	28.1	27.9	26.5	26	26.5	26.2	26	25.6	25.2
Czech Republic	19.5	19.1	18.5	18.1	17	16.6	16.9	16.7	16.4	16.0	15.5
Denmark	17.4	17.1	16.5	15.4	14.8	13.9	14.3	14	13.8	13.4	13.0
Estonia	30.7	30.8	30.2	29.6	29.5	29	29.6	29.3	28.6	28.2	27.6
Finland	17.6	17.2	16.6	15.3	14.5	13.8	14.2	14	13.7	13.3	13.0
France	14.7	14.3	13.8	12.4	11.8	11.1	11.6	11.3	11	10.8	9.9
Germany	17.1	16.1	15.4	15	14.7	14.2	14.6	13.9	13.7	13.3	13.0
Greece	28.2	28.1	27.6	26.2	25.1	24.3	25	25.4	24.3	24.0	23.6
Hungary	25	24.7	24.5	24.4	23.7	23	23.5	23.3	22.8	22.5	22.1
Ireland	15.4	15.2	14.8	13.4	12.7	12.2	13.1	13	12.8	12.7	12.2
Italy	26.1	25.2	24.4	23.2	22.3	21.4	22	21.8	21.2	21.6	21.1
Latvia	30.4	30	29.5	29	27.5	26.5	27.1	27.3	26.5	26.1	25.5
Lithuania	32	31.7	31.1	30.6	29.7	29.1	29.6	29.7	29.0	28.5	28.0
Luxemburg (Grand-Duché)	9.8	9.8	9.9	10	9.4	8.5	8.8	8.4	8.2	8.2	8.0

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Malta	26.7	26.7	26.9	27.2	26.4	25.8	25.9	26	25.8	25.3	24.3
Netherlands	12.7	12.5	12	10.9	10.1	9.6	10.2	10	9.8	9.5	9.1
Poland	27.7	27.4	27.1	26.8	26	25.3	25.9	25.4	25	24.4	23.8
Portugal	22.2	21.7	21.2	20.1	19.2	18.7	19.5	19.2	19.4	19.4	19.0
Romania	33.6	32.5	32.2	31.4	30.2	29.4	29.4	29.8	29.6	29.1	28.4
Slovenia	26.7	26.5	26	25.8	24.7	24	24.6	24.3	24.1	23.6	23.1
Spain	22.2	21.9	21.3	20.2	19.3	18.4	19.5	19.4	19.2	19.2	18.6
Slovakia	18.4	18.2	17.6	17.3	16.8	16	16.8	16.4	16	15.5	15.0
Sweden	18.6	18.1	17.5	16.2	15.6	14.9	15.4	15	14.7	14.3	13.9
United Kingdom	12.2	12.3	12	11.1	10.6	10.1	10.9	10.7	10.5	10.1	9.7
27 EU-Countries/ Average (unweighted)	22.3	21.9	21.5	20.8	19.9	19.2	19.8	19.6	19.2	18.9	18.4

Source: Own Calculations, December 2012.

Table 2. Size of the Shadow Economy of 4 European Countries
(Non EU-Members) over 2003–2013 (in % of off. GDP)

Country/ Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Croatia	32.3	32.3	31.5	31.2	30.4	29.6	30.1	29.8	29.5	29.0	28.4
Norway	18.6	18.2	17.6	16.1	15.4	14.7	15.3	15.1	14.8	14.2	13.6
Switzerland	9.5	9.4	9	8.5	8.2	7.9	8.3	8.1	7.8	7.6	7.1
Turkey	32.2	31.5	30.7	30.4	29.1	28.4	28.9	28.3	27.7	27.2	26.5
4 Non EU-Countries/ Average	23.2	22.9	22.2	21.6	20.8	20.2	20.7	20.3	19.9	19.5	18.9
Unweighted Average of all 31 European Countries	22.4	22.1	21.6	20.9	20.1	19.4	19.9	19.7	19.3	19.0	18.5

Source: Own Calculations, December 2012.

Table 3. Size of the Shadow Economy of 5 Highly Developed Non-European Countries over 2003–2013 (in % of off. GDP)

Country/Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Australia	13.7	13.2	12.6	11.4	11.7	10.6	10.9	10.3	10.1	9.8	9.4
Canada	15.3	15.1	14.3	13.2	12.6	12	12.6	12.2	11.9	11.5	10.8
Japan	11	10.7	10.3	9.4	9	8.8	9.5	9.2	9	8.8	8.1
New Zealand	12.3	12.2	11.7	10.4	9.8	9.4	9.9	9.6	9.3	8.8	8.0
United States USA	8.5	8.4	8.2	7.5	7.2	7	7.6	7.2	7	7.0	6.6
Other OECD Countries/ Unweighted Average	12.16	11.92	11.42	10.38	10.06	9.56	10.1	9.7	9.46	9.18	8.6

Source: Own Calculations, December 2012.

Table 4. Size of the Shadow Economy of Various Unweighted Averages over 2003–2013 (in % of off. GDP)

Averages/Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
27 EU- Countries/ Average (unweighted)	22.3	21.9	21.5	20.8	19.9	19.3	19.8	19.5	19.4	18.9	18.4
4 Non EU-Countries/ Average (unweighted)	23.2	22.9	22.2	21.6	20.8	20.2	20.7	20.3	20.0	19.5	18.9
5 Other OECD Countries/ Average (unweighted)	12.2	11.9	11.4	10.4	10.1	9.6	10.1	9.7	9.5	9.18	8.6
All 36 Countries/ Average (unweighted)	21.0	20.7	20.2	19.4	18.7	18.0	18.5	18.3	18.0	17.6	17.1

Source: Own Calculations, December 2012.

If we consider the last 2 years (2012 and 2013, see also Figures 3 and 4) and compare them with the year 2008, we realize that, in most countries, we had again a decrease of the size and development of the shadow economy. This is due to the recovery from the worldwide economic and financial crises. Hence, the most important reason for this decrease is, that, if the official economy is recovering or booming, people have less incentive to undertake additional activities in the shadow economy and to earn extra “black” money. The only exceptions are Greece and Spain, where the recession of the official economy is so strong, that it even reduced the demand of the shadow economy activities due to the severe income losses of the Greek (Spanish) people; the Greek (Spanish) shadow economy will decrease to 23.6% (18.6%) of official GDP in 2013; a decrease of 0.4 (0.6) percentage points compared to the year 2012!

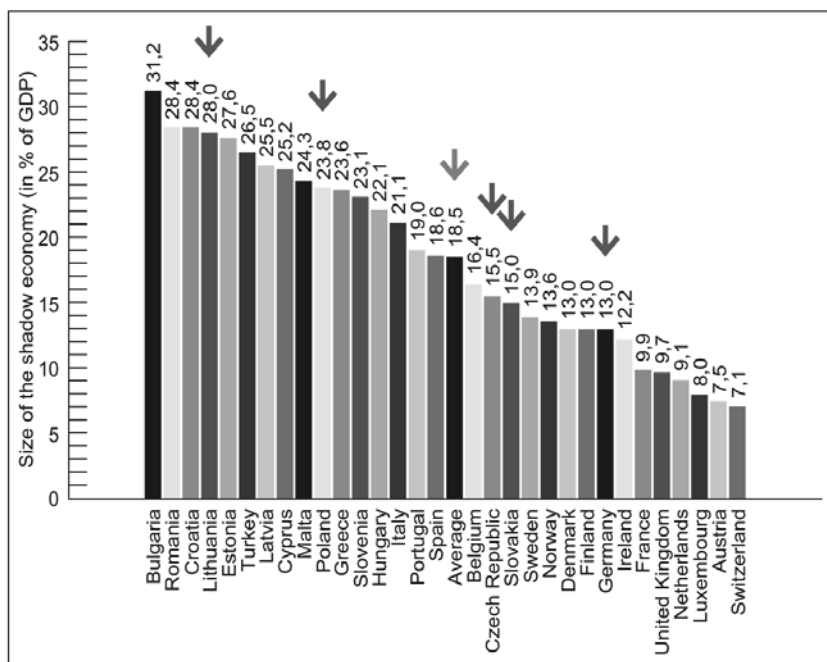


Figure 3. Size of the Shadow Economy of 31 European Countries in 2013 (in % of off. GDP)

Source: Own calculations, December 2012.

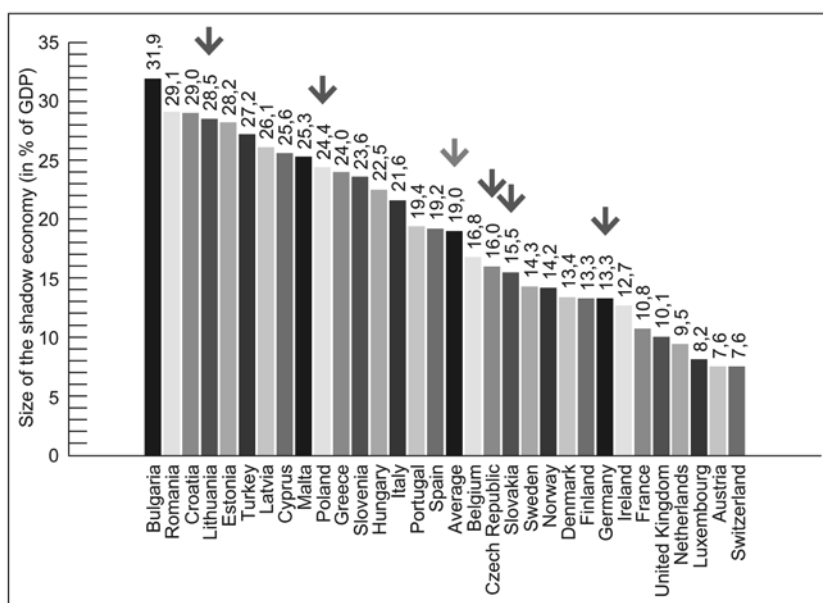


Figure 4. Size of the Shadow Economy of 31 European Countries in 2012 (in % of off. GDP)

Source: Own calculations, March 2012.

Furthermore, there are three different developments with respect to the size of the shadow economy:

1. The eastern countries or the “new” European Union members, such as Bulgaria, South-Cyprus, the Czech Republic, Latvia, Lithuania and Poland have higher shadow economies than the “old” European Union countries, like Austria, Belgium, Germany, Italy; hence, one can observe an increase of the size of the shadow economy from west to east.
2. Also, I observe an increase in the size and development of the shadow economy from north to south. On average, the southern European countries have considerably higher shadow economies than those of Central and Western Europe. This can also be demonstrated by Figures 3 and 4.
3. The five other highly developed OECD countries (Australia, Canada, Japan, New Zealand and the United States in Table 3) have much lower shadow economies with about 10.1 % of GDP average in 2009 which decreased to 9.2% in 2012.

4. Shadow Economies in Developed OECD Countries: What are the Driving Forces?

In two papers by Friedrich Schneider and Andreas Buehn, 2013, and Andreas Buehn and Friedrich Schneider, 2012, new investigations have been undertaken to tackle two questions:

- 1) what are the driving forces of shadow economy in highly developed OECD countries?, and
- 2) can we make a calculation of the size and development of tax evasion of OECD countries over the period 1999 to 2010? [compare here the studies Schneider and Buehn, 2013; Buehn and Schneider 2012].

In Table 5, we first show the average relative impact (in per cent) of the shadow economy determinants in 38 OECD countries over the period 1999 to 2010. If we consider Table 5 we clearly see that unemployment and self-employment have the biggest average impact of 14.6% (in per cent) on the shadow economy of the 38 OECD countries over the period 1999 to 2010. This is followed by tax morale with 14.5% and GDP growth with 14.3%, followed by business freedom with 14.2%. Poland shows a slightly different picture. Self-employment has the biggest influence on the size and development of the shadow economy of 14.5%, followed by indirect taxes, tax morale and business freedom with 14.4%.

Table 5. Average relative impact (in %) of the causal variables on the shadow economy of 38 OECD countries over 1999 to 2010

Country	Average size of the shadow economy	Personal income tax	Indirect taxes	Tax morale	Unemployment	Self-employment	GDP growth	Business freedom
Australia	13.8	12.4	13.4	14.1	18.1	15.8	13.2	13.0
Austria	9.8	12.4	14.6	14.1	11.8	16.8	15.9	14.4
Belgium	21.5	12.9	12.8	14.4	16.2	16.0	14.2	13.3
Bulgaria	34.6	14.9	13.5	14.8	14.8	14.2	13.7	14.2

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Canada	15.6	12.7	14.9	14.9	18.4	11.7	13.8	13.6
Chile	19.4	16.1	14.1	14.1	14.2	12.9	14.4	14.3
Cyprus	27.2	13.8	14.5	14.5	14.3	14.5	13.8	14.6
Czech Rep.	17.6	15.1	16.0	14.0	11.5	13.1	14.3	15.9
Denmark	17.3	10.8	13.1	14.7	18.2	15.6	14.4	13.2
Estonia	21.7	16.4	14.4	14.5	12.4	13.1	14.0	15.2
Finland	17.4	15.4	13.0	14.8	12.9	16.9	13.7	13.3
France	14.8	9.1	14.4	14.8	15.1	17.3	15.1	14.3
Germany	15.7	16.6	13.2	15.0	13.0	12.8	15.2	14.2
Greece	27.0	10.3	16.2	14.5	10.4	18.7	14.3	15.5
Hungary	24.1	14.0	14.1	15.0	15.0	14.2	13.5	14.2
Iceland	15.2	12.4	14.3	14.7	15.1	14.4	14.8	14.3
Italy	26.9	13.0	13.9	14.0	14.5	14.0	16.6	13.9
Korea	26.3	13.3	14.4	14.9	13.3	14.6	15.3	14.2
Latvia	22.2	14.6	14.3	13.9	15.1	14.6	13.3	14.2
Lithuania	25.4	13.1	14.5	14.1	15.1	14.5	14.2	14.5
Luxembourg	9.6	14.7	14.3	14.2	13.0	14.9	14.5	14.3
Malta	27.3	14.3	14.3	15.1	14.3	14.3	13.4	14.3
Mexico	30.0	14.3	13.7	14.5	14.4	14.2	14.9	13.9
Netherlands	13.2	14.6	13.6	14.0	16.1	13.7	14.2	13.8
New Zealand	12.2	14.6	14.2	14.2	15.2	14.3	13.2	14.2
Norway	18.6	14.1	13.8	14.2	14.1	14.5	15.4	13.9
Poland	26.4	14.1	14.4	14.4	14.2	14.5	14.1	14.4
Portugal	22.7	12.5	14.1	14.9	14.2	14.4	15.9	14.1
Romania	32.2	15.5	14.2	13.9	14.2	14.1	14.0	14.2
Slovak Rep.	17.5	15.0	14.7	14.7	14.4	14.4	12.0	14.8
Slovenia	25.2	14.4	14.3	14.4	14.8	14.4	13.2	14.4
Spain	22.8	11.2	13.6	14.6	17.5	16.4	13.8	12.9
Sweden	18.6	14.9	14.3	14.6	13.3	14.2	14.2	14.5
Switzerland	8.3	13.8	13.0	15.7	13.4	14.4	14.8	14.8
Turkey	30.6	13.9	14.1	14.5	13.7	14.5	15.1	14.3

United Kingdom	12.5	13.6	14.0	14.3	18.1	12.4	13.7	14.0
United States	8.7	13.9	14.1	13.7	14.9	14.4	15.0	14.1
Average	20.3	13.8	14.1	14.5	14.6	14.6	14.3	14.2

Source: Schneider and Buehn (2013).

5. The size and development of tax evasion⁷

5.1. Methodological remarks

From some time we have been hearing proposals that certain forms of typically criminal business activity (unofficial wholly illegal economy) should be included in the official GDP statistics. Greece and Hungary have implemented such solutions already and Bulgaria, Czech Republic, Estonia and UK have partial statistics of such activities. Also Africa has been taking account of the statistics of criminal activities in its official GDP from some time even if they have an adverse effect on the households, enterprises and the state as an organization. This is because where a state concedes to the commitment of “legally prohibited acts” or where the institutions of the state are incapable of fighting crime (mainly of economic nature), then we see a natural growth of demand (driving the economy in this industry) for tax consultants, accountants and lawyers that will defend both honest citizens harmed by offenders, those harmed by the state and the offenders themselves. They create demand for new integrated computer technologies (ICT) and the whole technical infrastructure, the task of which is to reduce the risk of committing “legally prohibited acts.” Finally, they create demand for new jobs that are assumed to serve the same purpose: counteracting the rising threats.

The proposed inclusion of a part of the unofficial wholly illegal economy as part of individual consumption by households (drugs, prostitution and contraband) in the EU’s GDP statistics, the solution that will come into force in autumn 2014, is an absurd and an instance

⁷ This chapter closely follows Buehn and Schneider (2012).

of creative accounting.⁸ Does it mean that offenders are supposed to change their social status on the account of creating jobs? Or, maybe, should they apply for old age benefits in the future since they contribute to the growth of GDP? Obviously, these are rhetorical questions.

According to the United Nations Office on Drugs and Crime (UNODC), proceeds from criminal activity represented almost 3.6% of the global GDP, or US\$ 2.1 trillion, in 2009 [*Estimating...*, 2011, pp. 4, 38]. However, there are no statistics taking account of the potential loss of GDP caused by this criminal activity (which, at this point in time, is very difficult to measure). Accordingly, note that our research indicating on a reduction of the share of the grey economy in the overall economy can be affected by an estimation error related to the computation of GDP as such in individual states. We should also admit that the MIMIC statistics do not address a large part of the wholly illegal economy (of typically criminal nature) and, accordingly, it is not an absolute magnitude [Breusch, 2005, pp. 367–391; Breusch, 2005, pp. 1–35] of the whole unofficial economy. However, it does not seem that other, alternative [Gemmell and Hasseldine, 2012, p. 26] methods of measuring the unofficial economy (e.g., Fig. 4) are better in individual terms. This results particularly from the lack of fixed data. This is because it is hard to expect that persons or organizations evading taxes by way of committing various “legally prohibited acts” will declare how and how much they benefit from this very business or what per cent of taxes they have not declared or paid.

The study of Schneider and Buehn [2012] and their results which originate from Table 6, allows us to present – for the first time – macroeconomic time series evidence for the potential level of tax evasion across OECD countries, also using insights from the survey on the German shadow economy presented in Feld and Schneider [2010]. In their survey, Feld and Schneider compare the size of the shadow economy estimated using surveys (microeconomic approach) with estimates derived – and most widely published – by the macroeconomic MIMIC-model and/or currency demand approaches. They argue that the rather large differences originate from the survey method, which does typically not record the total value added but only the value

⁸ Regulation by the European Parliament and Council (EU) No. 549/2013 of May 21, 2013, on the European system of national and regional accounts in EU, Official Journal U. L174/1.

added of undeclared work [Feld and Schneider, 2010]. If one takes into account material, another 3–4% may be added to the survey estimates. Moreover, illegal activities such as prostitution and illegally firms in the construction sector contribute another 4–5% of official GDP to the size of the shadow economy. Finally, statistical offices in OECD countries usually impute informal activities in officially published GDP measures; hence some shadow activities are already included in the “official” GDP. Thus another 1–2% of black activities from official GDP may be further added to the survey figures. The analysis of Feld and Schneider allows two conclusions: first, the shadow economy estimates derived by the MIMIC and/or currency demand approaches, and the survey approach can be reconciled with each other. Second and more importantly, the shadow economy can be disaggregated into different kinds of legal and illegal activities.

Applying the approach of Feld and Schneider (2010) we are able to derive estimates for legal undeclared work or – as we would like to define it – explicit shadow economic activities such as unreported income from self-employment; wages, salaries and assets from unreported work related to legal services and goods; and tax evasion. Using the size of the German shadow economy of 15% in 2010 as estimated by Schneider and Buehn (2012), we calculate an average size of the legal or explicit German shadow economy of approximately one third of the official GDP as demonstrated in Table 6. To compute time series estimates of tax evasion across OECD countries on the basis of the results of Feld and Schneider (2010) and Schneider and Buehn (2012), we make two assumptions. The first – to our view uncritical – assumption is that behavioural patterns across OECD countries are reasonably comparable. This assumption allows us to disaggregate the MIMIC model shadow economy estimates of Schneider and Buehn (2012) in a similar way for all OECD countries as demonstrated for Germany in Table 6. The second assumption – maybe a bit more debatable – is that the dynamics of tax evasion may be attributable to impact of the indirect tax burden and of self-employment. This assumption may be justified as for the majority of citizens direct taxes such as the personal income tax are automatically deducted, which leaves no room for evasion. All other determinants (except self-employment) Schneider and Buehn (2012) have identified as the driving forces of the shadow economy are rather linked to undeclared work

than pure tax evasion. Hence, the relative impact of the indirect tax burden and of self-employment may explain that proportion of legal shadow economic activities due to tax evasion.

For Germany, the average contribution of the indirect tax burden to the dynamics of the shadow economy is approximately one fourth (compare Table 6). Following our line of reasoning this means that one fourth of the shadow economy and its dynamics is due to tax evasion. Position (7) in Table 6 shows the so computed size of tax evasion in Germany in 2010, if we only consider indirect taxation.

Table 6. The proportion of explicit shadow economic, but legal activities in Germany

Kinds of shadow economy activities	Size in % of official GDP	Proportion of the overall shadow economy
Total shadow economy (estimated by the MIMIC and calibrated by the currency demand procedures)	15.0	100
Material (used)	3.0–4.0	20–25
Illegal activities (goods and services)	4.0–5.0	26–33
Already in the official GDP included illegal activities	1.0–2.0	7–13
Sum (2) to (4)	8.0–11.0	53–71
Explicit shadow economic, but legal activities (position (1) minus position (5))	4.0–7.0	29–47
Tax evasion (approx. 35% of the explicit shadow economy, driving forces: indirect taxation and self-employment)	1.4–2.5	10–16

Source: Adapted from Feld and Schneider (2010).

As Table 6 shows, material used and illegal shadow economic activities, i.e., non-explicit shadow economic activities, account for up to 71% of the size of the shadow economy. Hence, explicit shadow activities, i.e., shadow activities from “black” hours worked, make up approximately one third of the size of the shadow economy. Assuming

that the size of the non-explicit shadow economy has not changed a lot between 1999 and 2010, we deduct the 11% of non-explicit shadow economic activities from Schneider and Buehn's (2012) MIMIC model shadow economy estimates for each year during 1999 and 2010. This yields estimates of the explicit shadow economy for Germany between 3.6 and 5.4% of official GDP.

5.2. Empirical results of tax evasion figures

The computed tax evasion estimates for 38 OECD countries between 1999 and 2010 following the methodology proposed in the previous section are presented in Table 7. As discussed above, we assume that behavioural patterns across OECD are reasonably comparable. This assumption makes it possible to apply the proportion of the explicit shadow economy in percentage of the total shadow economy computed for Germany across all OECD countries. The average size of "legal," explicit shadow economic activities in the 38 OECD countries was 6.0% averaged over 1999 to 2010; it had decreased from 6.9% of official GDP in 1999 to 4.8% and 5.2% of official GDP in the years 2009 and 2010, respectively. We clearly see that the negative trend of the overall size of the shadow economies of the 38 countries over the years 1999 to 2010 also holds for the "legal," explicit activities of the shadow economy (e.g. repairing a car, constructing a house, doing a cleaning service, etc.). The highest level of the size and development of "legal, explicit activities" of the five countries had Poland with an average value over 1999 to 2010 of 7.9%. It had a value of 9.1% in the year 1999 which decreased to 6.1% in 2009 and 6.5% in 2010. In Lithuania the size of the "legal," explicit shadow economic activities was 9.0% in 1999 which decreased to a value of 5.8% in 2009 and 6.9% in 2010. The average over these years was 7.6%. In the Slovak Republic the size of the "legal," explicit shadow economic activities was 6.2% in 1999 which decreased to a value of 3.9% in 2009 and 4.3% in 2010. The average over these years in the Slovak Republic was 5.3%. In the Czech Republic the size of the "legal," explicit shadow economic activities was 6.4% in 1999 which decreased to a value of 3.9% in 2009 and 4.2% in 2010. The average over these years was 5.3%. The lowest level of the size and development of "legal, explicit activities" of the five countries had Germany with an average value over 1999 to

2010 of 4.7%. It had a value of 5.4% in the year 1999 which decreased to 3.6% in 2009 and 4.1% in 2010.

Table 7. Size and development of explicit shadow economic, but “legal” activities (in % of GDP) in Poland and its neighbouring countries

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Czech Rep.	6.4	6.0	5.8	6.0	6.1	5.8	5.6	5.1	4.6	3.9	3.9	4.2	5.3
Germany	5.4	5.0	4.9	5.1	5.3	5.1	5.0	4.6	4.3	3.8	3.6	4.1	4.7
Lithuania	9.0	8.5	8.2	8.3	8.3	8.0	7.6	7.0	6.8	6.7	5.8	6.9	7.6
Poland	9.1	8.6	8.5	8.8	8.9	8.6	8.4	7.8	7.1	6.3	6.1	6.5	7.9
Slovak Rep.	6.2	5.9	5.8	5.9	6.0	5.7	5.5	5.1	4.7	4.1	3.9	4.3	5.3
Average over 38 OECD countries	6.9	6.5	6.3	6.5	6.6	6.4	6.2	5.8	5.4	4.9	4.8	5.2	6.0

Source: Schneider and Buehn (2012) and own calculations.

It is often argued that self-employed have the most opportunities working in the shadow economy or evading taxes. The impact of self-employment on the shadow economy is less or only partly controllable by the government and may be ambiguous from a welfare perspective. A government can deregulate the economy or incentivize “to be your own entrepreneur,” which would make self-employment easier, potentially reducing unemployment and positively contributing to efforts in controlling the size of the shadow economy. Such actions however need to be accompanied with a strengthening of institutions and tax morale to reduce the probability that self-employed shift reasonable proportions of their economic activities into the shadow economy or evade taxes on a large scale.

The losses of VAT of the Polish Ministry of Finance have been investigated by a study of PwC (2013). In this study an attempt is made to estimate the size of the tax gap caused by VAT-fraud and a description of the mechanism of tax frauds in Poland and the European Union is given. Moreover, the study also gives a description of identified systematic problems which lead to abuses resulting in the increase in

tax frauds on a large scale. The study also presents some proposals of systemic solutions (which could have been helpful to fight against tax offenses and consequently to decrease the tax gap or tax fraud originating from VAT). One of the main results of the study is that the tax gap (or tax evasion from VAT) as a percentage of GDP was 2.4% in 2006 (maximum value) and 1.0% in 2006 (minimum value). It decreased to 2.0% (maximum value) and 0.6% (minimum value) in 2007 and then more or less consequently increased to 3.7% (maximum value) or 2.3% (minimum value) of GDP. These results are somewhat different with respect to the increase than the results we achieve in our paper where we have a slight decrease. But in both studies it is clearly shown how important tax fraud and consequently the fight against tax fraud are.⁹

Schneider and Buehn (2012) also show that self-employment is a very important determinant of the shadow economy, explaining approximately 17% of its variation. Seeing that self-employment is such an important determinant of the total shadow economy, one might argue that it of course determines “legal” shadow economic activities and also tax evasion. This suggests to also taking into account the relative impact of self-employment when calculating time series estimates of tax evasion.

Table 8 shows the tax evasion estimates for Poland and its neighbouring countries over the period 1999 to 2010 that do not only account for the indirect tax burden (see Table 9) but also for the impact of self-employment.

Table 8. Size and development of tax evasion (in % of GDP) in Poland and its neighbouring countries *accounting for indirect taxation and self-employment*

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Czech Rep.	3.4	3.2	3.2	3.2	3.3	3.2	3.0	2.8	2.5	2.1	2.1	2.3	2.9
Germany	2.2	2.1	2.0	2.1	2.2	2.1	2.1	1.9	1.8	1.6	1.5	1.7	1.9
Lithuania	4.1	3.9	3.8	3.8	3.8	3.6	3.5	3.2	3.1	3.1	2.7	3.2	3.5

⁹ For a more detailed analysis compare PwC (2013) and Reckon, (2009).

Poland	4.9	4.6	4.6	4.7	4.8	4.6	4.5	4.2	3.8	3.4	3.2	3.5	4.2
Slovak Rep.	2.8	2.7	2.6	2.7	2.7	2.6	2.5	2.3	2.1	1.9	1.8	1.9	2.4
Average over 38 OECD countries	3.6	3.4	3.4	3.4	3.5	3.4	3.3	3.1	2.9	2.6	2.5	2.8	3.2

Source: Schneider and Buehn (2012) and own calculations.

If we first look at the average values of the 38 countries and over the period 1999 to 2010 we get an average value of tax evasion of 3.2% of official GDP. We again find for the average but also for the single countries a negative trend, meaning that the size of tax evasion is decreasing over the period 1999 to 2010. The average size of tax evasion of the 38 OECD countries in the year 1999 was 3.6% of GDP and this value more or less steadily declines to 2.5% or 2.8% of the official GDP in the years 2009 and 2010. If we consider single countries, the highest value of tax evasion (measured in % of GDP) accounting for indirect taxation as well as self-employment had Poland with a value of 4.9% in 1999 which decreased to 3.2% and 3.5% in 2009 and 2010, respectively. Poland had an average value over 1999 to 2010 of 4.2%. In Lithuania the level of tax evasion had a value of 4.1% in the year 1999. This value decreased to 2.7% in 2009 and 3.2% in the year 2010. The average value was 3.5%. In the Czech Republic tax evasion had a value of 3.4% in the year 1999. This value decreased to 2.1% in the year 2009 and 2.3% in the year 2010. The average value over the period 1999 to 2010 was 2.9%. In the Slovak Republic the size of tax evasion accounting for indirect taxation and self-employment was 2.8% in 1999 which decreased to a value of 1.8% in 2009 and 1.9% in 2010. The average over these years was 2.4%. The lowest level of the size and development of tax evasion of the five countries had Germany with an average value over 1999 to 2010 of 1.9%. It had a value of 2.2% in the year 1999 which decreased to 1.5% in 2009 and 1.7% in 2010.

In Table 9 the size and development of tax evasion (in % of GDP) in 5 countries is shown if we only consider indirect taxation as driving force of tax evasion. Look at the average values of the 38 OECD countries first; we see – also true for single countries – a negative trend, meaning that the size of tax evasion had decreased during the period 1999 to 2010.

Table 9. Size and development of tax evasion (in % of GDP) in Poland and its neighbouring countries *accounting for indirect taxation*

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Czech Rep.	2.0	1.8	1.8	1.8	1.9	1.8	1.7	1.6	1.4	1.2	1.2	1.3	1.6
Germany	1.3	1.2	1.2	1.2	1.3	1.2	1.2	1.1	1.0	0.9	0.9	1.0	1.1
Lithuania	2.6	2.4	2.4	2.4	2.4	2.3	2.2	2.0	2.0	1.9	1.7	2.0	2.2
Poland	2.5	2.4	2.4	2.4	2.5	2.4	2.3	2.2	2.0	1.8	1.7	1.8	2.2
Slovak Rep.	2.0	1.9	1.8	1.9	1.9	1.8	1.7	1.6	1.5	1.3	1.2	1.4	1.7
Average over 38 OECD countries	2.0	1.9	1.9	1.9	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.5	1.8

Source: Schneider and Buehn (2012) and own calculations.

The average size of tax evasion across all 38 OECD countries was 2.0% of GDP in the year 1999 and had declined more or less steadily to 1.4% or 1.5% of official GDP in the years 2009 and 2010. If we consider single countries, the highest value of tax evasion (measured in % of GDP) had Lithuania with a value of 2.6% in 1999 which decreased to 1.7% and 2.0% in 2009 and 2010, respectively. Lithuania had an average value over 1999 to 2010 of 2.2%. The second highest size of tax evasion had Poland with a value of 2.5% in the year 1999. This value decreased to 1.7% in 2009 and 1.8% in the year 2010. Poland also had an average value of 2.2%. Then comes the Slovak Republic with a value of 2.0% in the year 1999. This value decreased to 1.2% in 2009 and 1.4% in the year 2010. The average value over the period 1999 to 2010 was 1.7%. In the Czech Republic the size of tax evasion accounting only for indirect taxation was 2.0% in 1999 which decreased to a value of 1.2% in 2009 and 1.3% in 2010. The average over these years was 1.6%. The lowest level of the size and development of tax evasion of the five countries had Germany with an average value over 1999 to 2010 of 1.1%. It had a value of 1.3% in the year 1999 which decreased to 0.9% in 2009 and 1.0% in 2010.

In Table 10 the size and development of tax evasion (in % of GDP) in 5 countries is shown if we only consider self-employment as driving force of tax evasion.

Table 10. Size and development of tax evasion (in % of GDP) in Poland and its neighbouring countries *accounting for self-employment*

Country	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Czech Rep.	2.4	2.2	2.2	2.3	2.3	2.2	2.2	2.0	1.8	1.6	1.5	1.7	2.0
Germany	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.6	0.7	0.8
Lithuania	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.2	1.1	1.2	1.0	1.2	1.3
Poland	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.2	1.1	0.9	0.9	1.0	1.3
Slovak Rep.	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.6	0.6	0.6	0.5	0.7
Average over 38 OECD countries	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.3	1.1	1.1	1.3	1.4

Source: Schneider and Buehn (2012) and own calculations.

Look at the average values of the 38 OECD countries first; we see – also true for single countries – a negative trend, meaning that the size of tax evasion had decreased during the period 1999 to 2010. The average size of tax evasion across all 38 OECD countries was 1.6% of GDP in the year 1999 and had declined more or less steadily to 1.1% or 1.3% of official GDP in the years 2009 and 2010. If we consider single countries, the highest value of tax evasion (measured in % of GDP) accounting only for self-employment had the Czech Republic with an average value of 2.0%. It had a value of 2.4% in 1999 which decreased to 1.5% and 1.7% in 2009 and 2010, respectively. The next is Lithuania with a value of 1.5% in 1999 which decreased to 1.0% and 1.2% in 2009 and 2010, respectively. Lithuania had an average value over 1999 to 2010 of 1.3%. In Poland tax evasion reaches a value of 1.4% in the year 1999. This value decreased to 0.9% in 2009 and 1.0%

in the year 2010. Poland also had an average value of 1.3%. Then comes Germany with a value of 0.9% in the year 1999. This value decreased to 0.6% in 2009 and 0.7% in the year 2010. The average value over the period 1999 to 2010 was 0.8. The lowest level of the size and development of tax evasion of the five countries had the Slovak Republic with an average value over 1999 to 2010 of 0.7%. It had a value of 0.8% in the year 1999 which decreased to 0.6% in 2009 and 0.5% in 2010.

6. Summary and concluding remarks

In this paper, the size and development of the shadow economy and of tax evasion of Poland and of Poland's neighbours (except for the Ukraine) are shown over the period 2003 to 2010. The size and development of the shadow economies is also shown for 36 highly developed OECD countries. The average size of the shadow economy in 27 EU-Countries is 22.3% in 2003 and decreased to 18.4% (of official GDP) in 2013. We also consider the most important driving forces of the shadow economy in 38 OECD countries. The biggest ones are with 14.6% unemployment and self-employment, followed by tax morale with 14.5% and GDP growth with 14.3%. The size of tax evasion (accounting for indirect taxation and self-employment activities) was on average 4.2% (of official GDP) in Poland, 1.9% in Germany and 2.9% in the Czech Republic. What type of policy conclusions can we draw from these results?

1. Our paper clearly shows that a reduction of the shadow economy can be achieved using various channels that governments can influence. The main challenge still is to bring shadow economy activities into the official economy in a way that goods and services previously produced in the shadow economy are still produced and provided in the official economy. Only then the government gets additional taxes and social security contributions and transfers value added from the shadow into the official economy.
2. The main driving forces of the shadow economy are indirect taxes, followed by self-employment and unemployment. Hence,

to reduce the shadow economy these are the most efficient policy options.

3. It is essential to liquidate tax havens which are currently a tool for commercial and wholesale tax evasion through complicated structure of tax avoidance – which appears to be difficult in the medium term or even long term– due to increasing number of beneficiaries who have the possibilities of hampering political and organizational precautions measures through their accumulation of the capital.
4. Fighting tax evasion from VAT-fraud is maybe the most important policy goal. If also in the European Union all member states try to efficiently fight tax fraud by making the VAT-system more efficient with clear-cut rules and little exemptions, then this would lead to great success in reducing this type of tax fraud. Due to the lack of the common fiscal policy it is unlikely to, among others, harmonize tax rates, and therefore the EU states having the highest tax rates should expect heightened risk of the tax reclaim fraud through numerous dummy transactions and buffer companies within intra-Community trade. Thus, it may lead to elimination of some honest business entities from the market which will be unable to compete with fraudulent entities in terms of the price. Budget losses triggered by the growing tax gap because of tax refunds undue will increase the deficit (and thus the public debt), and they may translate into spending cuts in the following tax year, which may impact the rate of economic growth.

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